Human influence important factor in possible global and UK temperature records

3 December 2014 - Early figures from the Met Office show 2014 is on course to be one of, if not the warmest, year on record both globally and for the UK.

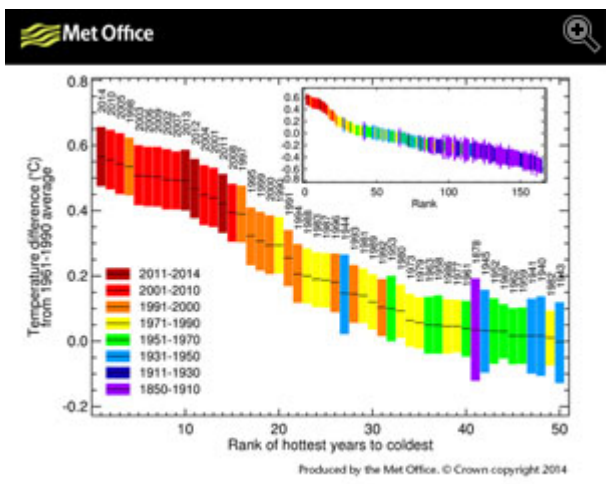
Recent Met Office research also suggests breaking the existing global and UK temperature records is much more likely due to human influence on the climate.

Early figures suggest global record possible

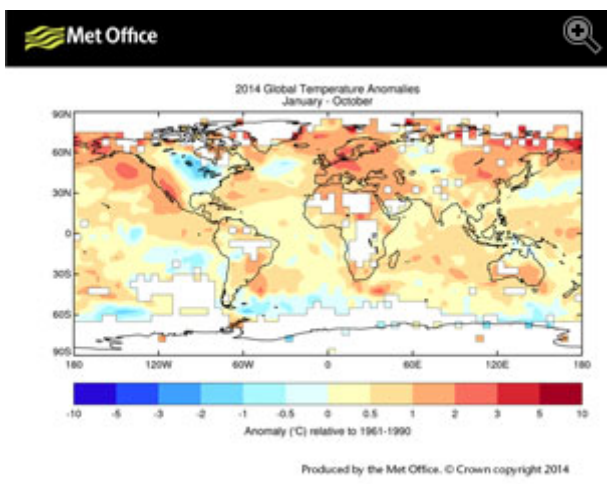
The global mean temperature for January to October based on the HadCRUT4 dataset (compiled by the Met Office and the University of East Anglia's Climatic Research Unit) is 0.57 °C (+/- 0.1) above the long-term (1961-1990) average. This is consistent with the statement from the World Meteorological Organization (WMO) today.

With two months of data still to add, the full-year figure could change but presently 2014 is just ahead of the current record of 0.56 °C set in 2010 in the global series which dates back to 1850. The final value for this year will be very close to the central estimate of 0.57°C from the Met Office global temperature forecast for 2014, which was issued late last year.

Colin Morice, a climate monitoring scientist at the Met Office, said: "Record or near-record years are interesting, but the ranking of individual years should be treated with some caution because the uncertainties in the data are larger than the differences between the top ranked years. We can say this year will add to the set of near-record temperatures we have seen over the last decade."



Global average temperature anomaly graph to 2014


Met Office
2014 Global Temperature Anomalies
January - October
Anomaly (°C) relative to 1961-1990
Produced by the Met Office. © Crown copyright 2014

Global temperature anomaly map 2014

UK's run of warm months makes record likely

The UK's mean temperature from 1 January to 25 November is 1.6 °C above the long term (1961-1990) average, which means this year is currently the warmest in our UK series dating back to 1910. This would beat the record anomaly of 1.4 °C set in 2006, but a cold December could change the final ranking for this year.

This year is also set to be one of the warmest on record in the Central England Temperature (CET) series, which goes back to 1659 and is the longest instrumental temperature series in the world.

Interestingly, while all months this year except August have seen above average temperatures in the UK, no single month has seen a temperature record. Instead the year has been consistently warm.

Phil Jones, Research Director of the University of East Anglia's Climatic Research Unit, said: "Spatially, 2014 has so far been warmer than the 1961-1990 average almost everywhere, the main exception being central and eastern parts of North America. For Europe, many countries in northern and eastern parts will likely have had near-record warm years."

Human influence a likely factor

One warm year does not necessarily say anything about long-term climate change - these trends need to be looked at over longer timescales of several decades.

However, new research techniques developed by the Met Office allow for rapid assessment of how human influence might have affected the chances of breaking temperature records.

This technique, known as an attribution study, uses climate models and observations to see how likely an event would be in the real world and in a world without human greenhouse gas emissions - enabling assessment of how human influence has altered the chances of an event.

Peter Stott, Head of Climate Attribution at the Met Office, said: "Our research shows current global average temperatures are highly unlikely in a world without human influence on the climate. Human influence has also made breaking the current UK temperature record about ten times more likely."

A wet year for the UK, but not a record

This is also set to be a notably wet year for the UK, with 1162 mm of rain between 1 January and 25 November.

If we saw average rainfall for the rest of the year, 2014 would rank as the 4th wettest year in the UK records dating back to 1910. It would also be 11th in the longer running England and Wales precipitation series , which dates back to 1766.

However, if we do have a very wet December this year could still break the UK record set in 2000 of 1337 mm.

Due to the large amount of variability in UK rainfall, it's not yet possible to say whether human influence directly impacted this year's total.

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